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Differences in Gay Men's AIDS Risk Knowledge and Behavior Patterns in High and Low AIDS Prevalence Cities

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Synopsis.....

Several studies have found reductions in acquired immunodeficiency syndrome (AIDS) risk practices

among gay men in high AIDS-prevalence cities since the start of the AIDS crisis. Much less is known about risk behavior patterns among gay men in smaller cities, where AIDS cases are less common and the prevalence of human immunodeficiency virus infection is relatively lower.

In the study, men entering gay bars in three cities, one large and two small, completed anonymous surveys of sexual practices and AIDS risk knowledge. Men in high AIDS-prevalence areas were found to have had a greater number of sexual partners, were more knowledgeable about AIDS, were much more likely to engage in low-risk practices (such as mutual masturbation or body rubbing), and had unprotected anal intercourse less frequently than gay men in smaller cities. The most common sexual activity among gay men in the larger city was mutual masturbation, a low-risk practice. The most common sexual activity among gay men in the smaller cities was unprotected anal intercourse.

Increased efforts are needed to educate gay men and to promote risk behavior changes among those living in smaller cities and in communities outside the prominent AIDS epicenters.

CASES of acquired immunodeficiency syndrome (AIDS) continue to increase rapidly, with 270,000 cases of AIDS expected in the United States by 1991 (1). Between 1 and 2 million persons in this country are estimated already to be infected with the human immunodeficiency virus (HIV) that causes AIDS (2). The World Health Organization projects that 50 to 100 million persons worldwide

may be infected with HIV by 1991 (3). AIDS prevention efforts must emphasize and promote the adoption of behavior that reduces risk for developing HIV infection and for transmitting the virus to others. Since HIV is most often transmitted during sexual contact, changes in sexual behavior are essential.

HIV infection can be transmitted heterosexually,

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from males to females, and from females to males (4,5). However, gay men who engage in high-risk sexual practices (especially unprotected anal intercourse) are in imminent danger of HIV infection (6). Presumably, this is because of the higher prevalence of asymptomatic HIV seropositivity among gay or bisexual men and to the efficient virus transmission route of unprotected anal intercourse. Therefore, AIDS prevention messages identify and encourage curtailment of high-risk sexual practices. If a person is sexually active outside of a longstanding monogamous relationship, the adoption of safer sex practices, those less likely to permit viral transmission, is encouraged. The required sexual behavior changes are applicable to both heterosexuals and homosexuals, but are urgently needed by gay men, given the much higher probability that a same-sex male partner will be HIV-infected.

Several large surveys have examined changes in the sexual behavior of gay men since the start of the AIDS crisis (7,8). Survey data indicate that within traditional AIDS epicenters, such as San Francisco and New York City, significant reductions in high-risk behavior have occurred. Whether because of intensive and credible educational programs, the sense of personal vulnerability created when so many people have close friends with AIDS, or a combination of these and other factors, gay men in some epicenters engage in high-risk patterns less often than they did several years ago (7,8). Such behavioral changes, which have lessened new cases of HIV seroconversion among homosexual males in San Francisco (7), for example, are promising. However, they occurred only after a substantial proportion of the sexually active gay male population already had become infected; HIV seroprevalence among homosexual men in the San Francisco and other large cities may exceed 60 percent (9).

Behavioral research on AIDS has tended to be

concentrated in urban areas with large numbers of AIDS cases. Much less is known about AIDS risk behavior or risk knowledge among gay men in areas currently with lower AIDS prevalence. Assessments of risk knowledge and behavior in geographical areas and among populations where AIDS is not yet common are important. The prevalence of HIV infection is likely to be lower in areas away from traditional urban AIDS epicenters. Consequently, primary prevention efforts in a currently low prevalence area, if successful, could have a greater impact in limiting the proportion of the population that could ultimately become infected. There is reason to suspect that risk behavior changes have been greater among gay men in AIDS epicenters than elsewhere, since individuals outside epicenters are less likely to know persons who already have AIDS, are less adequately exposed to prevention messages, and may experience fewer environmental supports to reinforce reduced risk conduct. However, this issue has had limited study. The purpose of our study was to examine knowledge about AIDS risk and the actual occurrence of risk behavior among gay men in areas of high and low AIDS prevalence.

Method

The study was conducted in three cities in the southeast, Atlanta, GA; Birmingham, AL; and Tupelo, MS. At the time of the study, Atlanta, a high-prevalence area, had about 837 AIDS cases and was among the 11 cities in the country with the greatest number of cases (10). During the same period, Birmingham had 65 and Tupelo had 6 reported cases of AIDS. These two cities were defined as low-prevalence areas. Birmingham (SMSA population, 671,786) and Tupelo (six-county regional population, 282,951) are smaller cities than Atlanta (population, 2,030,000). Birmingham is 130 miles and Tupelo is 400 miles from Atlanta. However, even after taking into account the population differences of the three cities, Atlanta had a much higher AIDS prevalence per unit population (41.2 cases per 100,000 population) than the smaller cities (7.43 cases per 100,000 population).

Subjects and data collection procedures. Subjects in the study were men who visited gay bars in the three cities. On two consecutive evenings in each city, all men entering the bars were asked to voluntarily complete a measures packet. Patrons were told that the anonymous survey was being con-

ducted to gain information related to AIDS and that the project was endorsed by the bar or club management. Two bars were surveyed in Atlanta and Birmingham; the clubs selected were those identified as popular by local gay community leaders. Tupelo had only one gay club. An average of 86 percent (from 78 percent in Atlanta to 92 percent in Tupelo) of male bar patrons agreed to complete the measures, providing a representative sample of gay men who visited bars in these cities.

Measures. Each packet requested demographic information, such as age, race, education level, city of residence, and number of personal friends or acquaintances, if any, who had AIDS. Personal identifiers were not requested.

AIDS risk knowledge test. A 40-item true-false test assessing practical knowledge about AIDS risk behavior was completed by each subject. The items asked about high-risk practices, risk-reduction steps, and possible misconceptions about HIV infection. Sample scale items included "Anal intercourse is high risk for transmitting the AIDS virus" (T), "Most people who transmit the AIDS virus look unhealthy" (F), "A negative result on the AIDS virus antibody test can occur even for people who carry the virus" (T), and "Condoms make intercourse completely safe" (F). Previous investigations (11-13) have established the reliability, validity, and the psychometric characteristics of the measure, including adequate internal consistency, test-retest reliability, and sensitivity to the effects of AIDS prevention educational messages.

Survey of recently occurring sexual practices. A second measure listed some sexual activities and asked respondents to mark the number of times and the number of different partners with whom those sexual activities occurred during the preceding 2-month period. The retrospective period was chosen because the time frame was short enough to constitute an assessment of recent behavior, with less recall inaccuracy than if a longer retrospective period was used. Two months is a sufficiently long period to reveal relatively low-frequency behavior.

The assessed behaviors included unprotected anal and oral intercourse using condoms, oral-anal contact, and sexual practices to orgasm with no insertion or penetration (mutual masturbation and body rubbing). Several activities (such as fisting and vaginal intercourse with a female partner) were assessed but were reported very infrequently in the sample and were therefore not analyzed.

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Subjects were dropped from the sample if they were not residents of an assessment city and were only visiting the area on an evening when assessments were made. About 20 subjects were excluded for this reason. Persons who completed the measures on one night were not asked to complete them a second time if they were at a club on both nights when assessments were made. The final sample was 290 men (127 from the high-prevalence city and 163 from the two low-prevalence cities).

Results

The mean age of subjects in the sample was 30.5 years, the mean years of education was 14.9, 96.5 percent of the sample was white, and 3.5 percent was black or Hispanic. Preliminary analyses revealed that the samples from the two low-prevalence cities did not differ significantly on any variable. They were therefore combined into a single, low-prevalence area sample. Men from the low-prevalence areas were slightly younger than men from the high-prevalence area (mean age of 29.5 years, as opposed to a mean of 31.7 years), and reported an average of 14.1 years of education (15.9 for the high-prevalence area sample).

In order to determine whether men in high- and low-prevalence cities differed in overall risk knowledge and activity, a multivariate analysis of variance (MANOVA) was performed comparing the two geographical groups on all dependent measures taken together (risk knowledge test scores, sexual practice items, and number of different sex partners). A MANOVA was used because of the large number of individual behavior variables and the need to control for nonindependence between the variables. A significant multivariate effect was found (Wilk's Lambda = 9.23, DF = 10,237, $P < .0001$), confirming overall differences between the high- and low-prevalence areas. Univariate analyses of variance were performed on individual variables to isolate the specific differences between groups.

Table 1. Frequencies of high- and low-risk practices among 290 gay men during a 2-month period

Variable	High-prevalence (mean) area	Low-prevalence (mean) area	F value	P value
AIDS risk knowledge test score.....	36.2	33.2	38.83	.0001
<i>Anal intercourse, no condom</i>				
Insertive partner.....	0.8	2.4	5.37	.03
Receptive partner.....	0.8	2.1	NS	NS
Total.....	1.7	4.6	5.29	.02
<i>Unprotected oral intercourse</i>				
Insertive partner.....	0.7	1.3	NS	NS
Receptive partner.....	0.7	1.2	NS	NS
Mutual masturbation, no insertion.....	4.7	1.9	19.50	.0001
Body rubbing, no insertion.....	1.6	0.9	4.43	.04
<i>Anal intercourse, condom used</i>				
Insertive partner.....	0.9	1.4	NS	NS
Receptive partner.....	0.3	0.4	NS	NS
Number of sexual acts..	12.3	12.7	NS	NS
Number of different sexual partners.....	3.4	2.0	6.90	.01

Table 2. Percent distribution of sexual activities practiced by 290 gay men in 2-month period in high- and low-prevalence areas ¹

Activity	High prevalence	Low prevalence
Anal intercourse without condom ...	13.0	35.4
Oral intercourse without condom....	11.4	19.7
Oral-anal contact.....	14.6	8.7
Mutual masturbation, no insertion...	38.2	15.0
Body rubbing, no insertion.....	13.0	7.0
Anal intercourse, condom used.....	9.8	14.2

¹ Mean number of sexual encounters by men in high-prevalence area = 12.3. Mean of number of sexual encounters by men in low-prevalence area = 12.7 during past 2 months.

The results of these analyses are presented in table 1, which shows that gay men in the high-prevalence city had significantly higher scores ($P<.0001$) on the AIDS Risk Knowledge Test than men in low-prevalence areas, indicating their greater and more accurate understanding of AIDS risk practices. With respect to behavior, subjects in the high-prevalence area reported more sexual partners ($P<.01$), but significantly fewer occurrences of unprotected anal intercourse ($P<.02$), and significantly more frequent sexual encounters involving nonpenetrative, low-risk sexual practices, such

as mutual masturbation ($P=.0001$) and body rubbing ($P<.04$), than did men from low-prevalence areas. When data on unprotected anal intercourse was broken down, based on whether the subject was an insertive or receptive partner, men in the low-prevalence area were more likely ($P<.03$) to practice unprotected insertive anal intercourse. A mean difference in the direction of more frequent unprotected receptive anal intercourse among men in low-prevalence cities was observed, but did not reach significance. As expected, subjects in the high-prevalence city had more friends or acquaintances with AIDS than men in the low-prevalence cities ($P<.05$).

Table 2 shows the proportion of total sexual encounters during the preceding 2 months when each sexual practice occurred for men in high-prevalence and low-prevalence areas. As these descriptive data indicate, a low-risk practice (mutual masturbation) was the most common activity of large-city gay men; 38.2 percent of all sexual encounters were characterized by this activity at time of orgasm. In contrast, the most common practice of men in smaller cities was unprotected anal intercourse, which occurred in 35.4 percent of all sexual encounters. Three safer-sex practices (mutual masturbation, body rubbing, and intercourse with condoms) together accounted for 61 percent of the sexual acts of men in high-prevalence areas. In contrast, only 36.2 percent of the sexual encounters of low-prevalence area men involved these practices.

This pattern of findings indicates that while gay men in the low-prevalence area had somewhat fewer sexual partners than men from a high-prevalence area, they engaged more often in risky behavior, such as unprotected anal intercourse, they engaged less often in such safer sex practices as body rubbing or mutual masturbation, and they had less accurate practical knowledge about AIDS. Condom use during intercourse was not significantly more frequent in the high-prevalence area. However, this appears to be because of relatively low rates of intercourse and to the greater frequency with which gay men in the large city engaged in sexual practices that did not involve insertion.

Discussion

HIV infection prevalence is lower among gay men (as well as among heterosexuals, intravenous drug users, and prostitutes) who live in smaller cities, than among the same groups within tradi-

tional AIDS epicenters (9,14,15). However, certain high-risk behaviors occurred more often, and safer sex practices occurred less frequently, in the same smaller-city regions. Unless this pattern changes, even more rapid HIV seroconversion rates will occur for gay men in all areas.

To effect change, there is a need to develop credible educational campaigns targeting persons at risk for HIV infection who live in smaller cities; to better sensitize gay men in nonurban areas to the threat posed by AIDS before cases of AIDS become more common; and to establish norms and standards favoring safer conduct among groups at risk for AIDS. Some of the same prevention approaches used in gay communities of high-prevalence areas may be applicable to smaller cities.

However, research is needed to develop alternative education strategies which can reach the less visible and less organized at-risk populations in smaller cities. Research is needed to identify reasons why persons outside AIDS epicenters less often adopt reduced-risk practices. Insufficient access to education about risk reduction steps; lack of perceived personal vulnerability to AIDS; and insufficient models, reinforcement, and peer support encouraging safer conduct are potential factors that may require different community prevention approaches. Larger-scale research is needed to identify the kinds of community-based interventions which are likely to prove successful for AIDS prevention efforts in rural and small city areas.

Results of this study are based on a limited sample of primarily white males who visited gay bars in several cities in one part of the country. Further studies are needed with samples of more diverse racial composition, with younger persons, and with populations other than bar patrons. In addition, the survey measure used in this study did not assess whether high-risk practices were occurring in the context of steady or casual sexual contacts. If risky behavior is limited to steady relationships rather than casual sexual encounters, these data may overestimate the overall level of risk behavior.

While this study examined the behavior of gay men, promoting behavior change among persons at risk for AIDS outside traditional AIDS epicenters and outside traditional risk groups remains a major primary prevention challenge.

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